GIS Data Layer Development

Final Report

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Introduction

The project discussed in this report is a result of coordination between the Missouri Department of Transportation (MoDOT) and the Missouri Resource Assessment Partnership (MoRAP) staff. This report summarizes activities completed between July 1, 2005, and June 30, 2006 on the continued progress on the archaeological database for the state of Missouri and a data delivery for the next iteration of the data.

The Missouri Department of Transportation (MoDOT), State Historical Preservation Office, Department of Natural Resources (SHPO-DNR), and Missouri Resource Assessment Partnership (MoRAP), have been working together to create a geodatabase that will represent known areas of cultural significance in the state of Missouri. Recently, the Army Corp of Engineers and the United States Forest Service, Mark Twain National Forest, also formally joined this effort as funding partners. This is the third year for the project. The hard copy data captured and converted to digital form includes survey and site polygons and selected accompanying attribute data. Surveys are areas that have been surveyed for archaeological sites, usually in areas where human infrastructure is slated to occur. Sites are identified locations of historical or cultural significance. Survey and site data were captured in a geodatabase using SDE and a SQL relational database server. This enables the digitizing of polygons and the attribution of tables to occur nearly simultaneously. The project is built within ArcMap and SQL Server, and is portable and can be accessed by multiple users at once. The end goal is to have digital layers of archaeological surveys and sites statewide, including the attributes of the hard copy survey reports and site forms.

Goals

MoDOT has been a member of MoRAP from its inception in 1995, and has been a key state agency supporter. The overarching goals behind MoDOT's participation include the production of needed GIS and remote sensing information at low cost and the facilitation of coordination and cooperation among key MoDOT partners. Data layers produced cooperatively have wide buy-in from multiple agencies, which provided increased credibility, and funds are leveraged so that costs are shared among partners, therefore saving MoDOT money.

The proposed activities listed here are based on an ongoing project between MoDOT and MoRAP staff originally beginning in 2002. The initial data delivery occurred in June of 2004.

The goal of this project is to continue populating the Archaeological database based on the Cultural Resources data housed at the State Historic Preservation Office (SHPO). This will include digitization of survey and site polygons and attribution of survey and site attribute tables.

Archaeology Database Project Summary

For a number of years MoDOT, DNR, and the University of Missouri–Columbia have been discussing the usability and necessity of a digital representation of archaeological surveys and sites as an aid to cultural resource management and planning. After some months spent designing a methodology for data capture that is a best fit for end-users and a quick, streamlined, production oriented procedure, survey and site polygons and attributes for numerous counties have now been completely entered and checked for QAQC in a relational geodatabase. Our original goals were to form an interagency committee to guide database development and to design the database. The end goal of this project is to have a manageable and up-to-date digital representation of all archaeological surveys and site locations that have been and are being registered at SHPO. SHPO has allowed these datasets to leave their building for short time periods, which has allowed data capture on-site at the MoRAP offices. Per the goal established at the last annual meeting (July 2005), the survey data for the following eighty-five counties have been captured and checked at the completion of this year's work, (due date June 30, 2006), for QAQC (Figure 1):

Adair
Andrew
Atchison
Audrain
Barton
Bates
Benton
Bollinger
Boone
Buchanan
Butler
Caldwell
Camden
Cape Girardeau
Carroll
Carter
Cass
Chariton
Christian
Clark
Clay
Clinton
Crawford
Dade
Dallas
Daviess
DeKalb
Douglas
Dunklin
Franklin
Gasconade
Gentry
Greene
Grundy
Henry
Hickory
Holt
Howard
Howell
Iron
Jackson
Jefferson
Knox
Lawrence
Lewis
Lincoln
Linn
Livingston
Macon
Madison
Maries
Marion
Mercer
Mississippi
Montgomery
Morgan
New Madrid
Oregon
Osage
Ozark
Pemiscot
Perry
Pike
Polk
Putnam
Ralls
Reynolds
Ripley
Schuyler
Scotland
Scott
Shannon
St. Charles
St. Francois
St. Louis
St. Louis City
Ste. Genevieve
Stone
Sullivan
Texas
Warren
Webster
Worth
Wright

In December 2005 the decision was made to move the attribute data out of the SDE format into a more stable and flexible SQL Server format. This migration allowed for the creation of a web-based multi-user form. Designed to expedite the capture of attributes by decreasing the amount of repetitive data entered, this web form, funded by MoRAP, increased the speed of input by approximately 50%. During the previous annual meeting a goal was set to attribute all sites for counties with survey data completed and site polygons already captured (54 counties) up to that point, then continue forward capturing both survey and sites for each county simultaneously. As of June 2006, all available sites were digitized and attributed in the following 75 counties:

Adair	Dunklin	Ozark
Atchison	Gasconade	Pemiscot
Audrain	Gentry	Perry
Barton	Greene	Pike
Bates	Grundy	Polk
Benton	Hickory	Putnam
Bollinger	Howard	Ralls
Boone	Iron	Reynolds
Buchanan	Jackson	Ripley
Butler	Jefferson	Schuyler
Camden	Knox	Scotland
Cape Girardeau	Lawrence	Scott
Carroll	Lewis	Shannon
Carter	Lincoln	St. Charles
Cass	Linn	St. Francois
Christian	Macon	St. Louis
Clark	Maries	St. Louis City
Clay	Marion	Ste. Genevieve
Clinton	Mercer	Stone
Crawford	Mississippi	Sullivan
Dade	Montgomery	Warren
Dallas	Morgan	Webster
Daviess	New Madrid	Worth
DeKalb	Oregon	Wright
Douglas	Osage	

The total number of sites and surveys digitized is as follows:

Surveys Captured This Period:	3,500 polygons
Total Surveys Captured for the Project:	13,000 polygons
Sites Digitized and Attributed This Period:	7,300 polygons
Total Sites Captured for the Project:	15,800 (9,400 fully attributed)

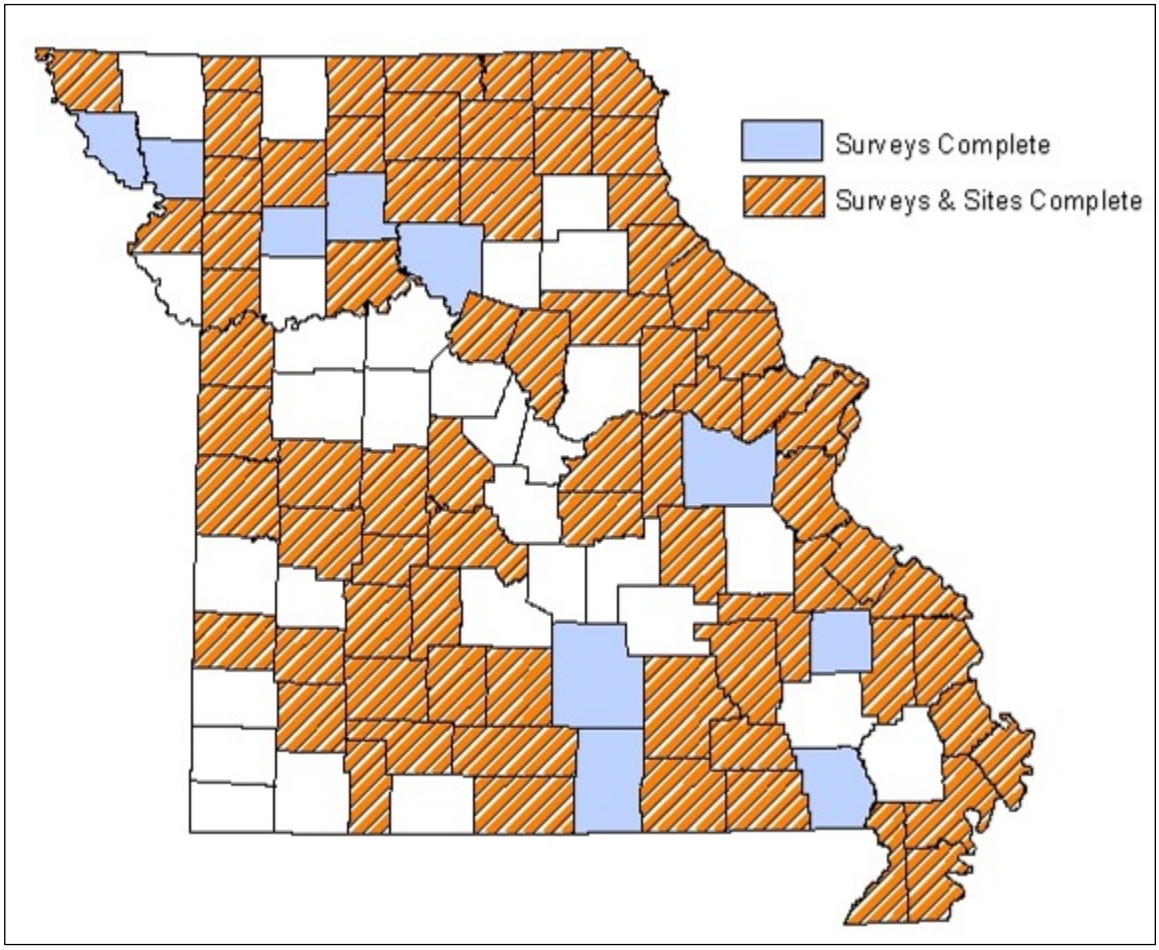

Figure 1. Counties with sites and surveys completed to date.

Eighty-five counties of surveys and 75 counties of sites have been completely entered into the geodatabase and checked for QAQC and three more are in progress at the time of this writing. The total number of surveys captured, 13,000, exceeded our goal of 12,000. The number of sites both digitized and attributed, 7,300, represents sites that had been digitized but not attributed in FY05, plus sites that were both digitized and attributed in FY06. All the numerical goals established for FY05-06 have been exceeded, primarily due to the increased speed afforded by the new web-based data entry methodology.